The Patent Office
Concept House
Cardiff Road
Newport
South Wales
NP10 8QQ

I, the undersigned, being an officer duly authorised in accordance with Section 74(1) and (4) of the Deregulation & Contracting Out Act 1994, to sign and issue certificates on behalf of the Comptroller-General, hereby certify that annexed hereto is a true copy of the documents as originally filed in connection with the patent application identified therein.

In accordance with the Patents (Companies Re-registration) Rules 1982, if a company named in this certificate and any accompanying documents has re-registered under the Companies Act 1980 with the same name as that with which it was registered immediately before re-registration save for the substitution as, or inclusion as, the last part of the name of the words "public limited company" or their equivalents in Welsh, references to the name of the company in this certificate and any accompanying documents shall be treated as references to the name with which it is so re-registered.

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Signed

Dated 9 May 2001

Patents Form 1/77

Patents Act 1977
(Rule 16)

The Patent Office

10MAY99 E445765-26 D02246
P01/7700 0.00 - 9910682.5

D Y & CO

THE PATENT OFFICE
-7 MAY 1999
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Request for a grant of a patent

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)

The Patent Office

Cardiff Road
Newport
Gwent NP9 1RH

1. **Your reference** — P/6835.GB

2. **Patent application number** *(The Patent Office will fill in this part)* — 9910682.5 — 07 MAY 1999

3. **Full name, address and postcode of the or of each applicant** *(underline all surnames)*

Argo Interactive Limited
7 Dukes Court
Chichester
West Sussex
PO19 2FX

Patents ADP number *(if you know it)* — 7606734001

If the applicant is a corporate body, give the country/state of its incorporation — United Kingdom

4. **Title of the invention** — Data Processing Apparatus

5. **Name of your agent** *(if you have one)* — D YOUNG & CO

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

21 NEW FETTER LANE
LONDON
EC4A 1DA

Patents ADP number *(if you have one)* — 59006

6. **If you are declaring priority from one or more earlier patent applications, give the country and date of filing of the or each of these earlier applications and (if you know it) the or each application number**

Country	Priority application number *(if you know it)*	Date of filing *(day/month/year)*

7. **If this application is divided or otherwise derived from an earlier UK application, give the number and filing date of the earlier application**

Number of earlier application	Date of filing *(day/month/year)*

8. **Is a statement of inventorship and right to grant of a patent required in support of this request?** *(Answer 'Yes' if:*
a) any applicant named in part 3 is not an inventor, or
b) there is an inventor who is not named as an applicant, or
c) any named applicant is a corporate body.
See note (d))

Yes

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9. **Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document**

Continuation sheets of this form	0
Description	3
Claims(s)	0
Abstract	0
Drawing(s)	0

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10. **If you are also filing any of the following, state how many against each item.**

Priority documents	0
Translations of priority documents	0
Statement of inventorship and right to grant of a patent *(Patents Form 7/77)*	0
Request for preliminary examination and search *(Patents Form 9/77)*	0
Request for substantive examination *(Patents Form 10/77)*	0
Any other documents *(please specify)*	0

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11. **I/We request the grant of a patent on the basis of this application.**

Signature D Young & Co

D YOUNG & CO
Agents for the Applicants

Date 07 May 1999

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12. **Name and daytime telephone number of the person to contact in the United Kingdom** N A J Robinson 01703 634816

Warning

After an application for a patent has been filed, the Comptroller of the Patent Office will consider whether publication or communication of the invention should be prohibited or restricted under Section 22 of the Patents Act 1977. You will be informed if it is necessary to prohibit or restrict your invention in this way. Furthermore, if you live in the United Kingdom, Section 23 of the Patents Act 1977 stops you from applying for a patent abroad without first getting written permission from the Patent Office unless an application has been filed at least 6 weeks beforehand in the United Kingdom for a patent for the same invention and either no direction prohibiting publication or communication has been given, or any such direction has been revoked.

Notes

a) If you need help to fill in this form or you have any questions, please contact the Patent Office on 01645 500505

b) Write your answers in capital letters using black ink or you may type them

c) If there is not enough space for all the relevant details on any part of this form, please continue on a separate sheet of paper and write "see continuation sheet" in the relevant part(s). Any continuation sheet should be attached to this form.

d) If you answered 'Yes' Patents Form 7/77 will need to be filed.

e) Once you have filled in the form you must remember to sign and date it.

f) For details of the fee and ways to pay please contact the Patent Office.

Provisional Patent Application

P/6835.GB

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A system to Remove Duplicated Information in Hypertext

Overview:

A majority of information currently available in HTML and other mark-up languages has been designed for display on a Desktop Computer Monitor of a typical resolution of 640 by 480 or 1024 by 768 pixels. A typical small screen device only has a resolution of 120 by 90. This system has been designed to re-process the original document into a format that will be easier to interpret and understand on a small screen device.

This system has been designed for the purposes of converting information published in a hypertext mark-up language, to a format more suitable for small screen device. In a typical installation, the hypertext language would be HTML and the destination device would be PDA (Personal Digital Assistant) or Mobile phone.

The system can be used on any mark-up language and work both locally as well as across a network.

Problem:

Designers of computerised hypertext often repeat information on many pages of text. Replication of this kind of information can lead to extended technical delays such as the downloading time, and longer reading times by readers. This is especially true on small screen devices such as mobile telephones and Personal Digital Assistants (PDA's). An example is a navigational toolbar on every page of a site on the World Wide Web. In cases where the hypertext designer preferred large and powerful computers, it may be almost impossible to access it on small devices, even if such portability was originally intended.

Solution:

Hypertext documents are viewed in some sequence by each reader, moving from one to another by choosing 'links' within each page. Where some information is presented on an early page and then ignored by the reader, it might be reasonable to assume that they are not interested in it. Also, many modern hypertext document systems (sometimes called 'web sites') are designed in a hierarchical form. There may be pages to list the sections of the web site, and more to list each sub-section, followed by pages containing actual content. Either such a hierarchy or the historical tracking of a user's reading could be employed to assist Argo's invention in guessing which pages a reader should already have read, if historical tracking information has not been recorded for them.

Argo proposes a system of computer software, through which users are required to fetch hypertext documents that they wish to read. Typically this is in the form of an intermediate 'proxy server' but a stand-alone mode of operation can also be envisaged. The system processes the hypertext pages as they are transferred from the storage location to the reader, removing parts, recording what it has found, and performing other tasks.

Once a hypertext document has been requested by the user and subsequently received by the system, Argo's system examines the hierarchy in which the page exists on the basis of the document's Uniform Resource

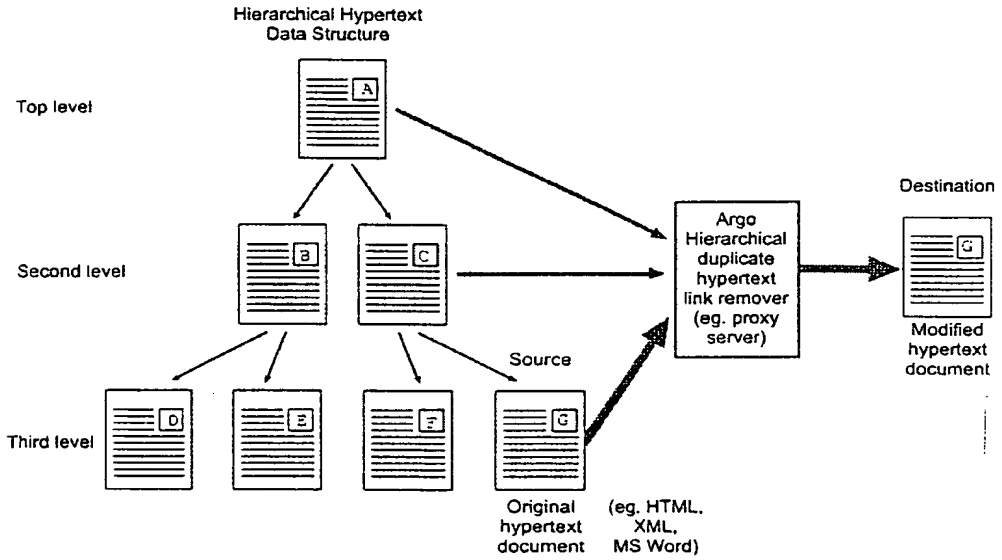
Identifier (URI). This URI, or some similar information appropriate to the hypertext system being used, should uniquely identify the page and may provide some information about the hierarchy in which it exists. Argo's invention fetches each page that is above th requested one in the hierarchy (sometimes called 'parent' pages), and makes a note of discrete units of information on each page. It may only note links to other pages, but divisions of other information such as images or footnotes can also be envisaged. If the reader's activity is being recorded, then pages they have already viewed may be considered instead of parent pages of the current document.

Once a note has been made of the information units on each page, those units that are present on parent pages are removed from the one requested by the reader. One or more new links are added to the current page to ensure that the reader has the opportunity to return to pages which do contain the links, should they wish to use them.

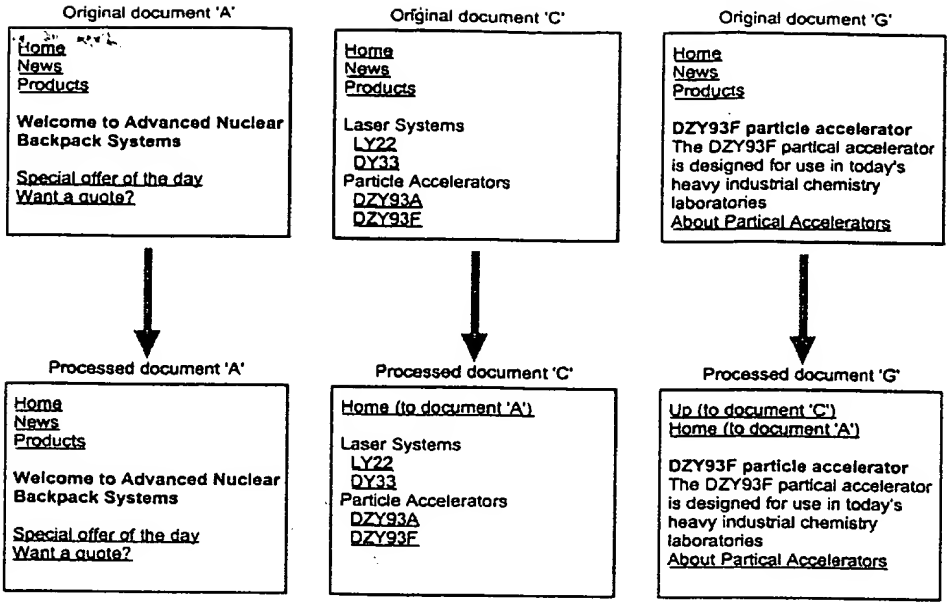
The advantage of this a procedure is that each document will be reduced to a more manageable size without removing significant information from it, and without requiring special preparation by the hypertext author. This is important for small devices that are technically limited and very different from the majority of readers for whom such authors write.

If the system is configured to work with a historical record of pages viewed by the reader, the oldest page considered as part of the link removal may either be the first page seen, the first seen within a certain time like ten minutes, or the *N'th* last page, perhaps the tenth last. It would not consider any page viewed after the first viewing of the current page (nor of course would it treat the current page as a previous one). This ensures that if the user goes 'Back' to a previous page, they will not lose all of the links on it.

The first diagram shows the structure of an imaginary web site. If a user requests page 'G', Argo's system will compare it with documents 'C' and 'A' before delivering the abbreviated version of 'G'. If Argo's system is operating on the basis of the reader's previous actions rather than the web site hierarchy, then all (or a certain number of the most recent) pages previously viewed will be considered instead.



The second diagram shows the same pages, as they would be processed by Argo's system. The top row shows the original hypertext pages, and the bottom row shows how those pages might appear after processing.



As the second diagram shows, duplicated links that appear on lower level pages are removed and replaced with links to parent pages. Links on pages high in the hierarchy (or viewed earlier) are kept regardless of how they appear on lower (or later) pages.